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Disarmament in Outer Space and Sustainable Development

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Abstract:

Demilitarization of space is a vital step towards ensuring sustainable development in outer space. The militarization of space poses a significant threat to international security and stability and can trigger an arms race in space.

This paper examines the legal and policy framework governing space activities, including the Outer Space Treaty of 1967, which prohibits the deployment of weapons of mass destruction in outer space. However, the treaty does not explicitly prohibit the use of conventional weapons in outer space, which has led to concerns about the militarization of space.

The research analyses the impact of militarization on sustainable development in outer space, including the challenges and opportunities. Using space for military purposes can divert resources from space exploration

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and scientific research, which are critical for sustainable development. On the other hand, the use of space for peaceful purposes, such as satellite technology, can provide critical data for sustainable development.

The findings indicate that the demilitarization of space could contribute significantly to sustainable development in outer space. Demilitarization would free up resources for space exploration, scientific research, and other peaceful uses of outer space. The paper recommends enhancing transparency and confidence-building measures, promoting international cooperation, and capacity-building in developing countries to promote the demilitarization of space.

Keywords: Disarmament, Space, Sustainable Development, Legal Framework, Outer Space Treaty, Military Purposes.

INTRODUCTION

Space law is the collective term for several treaties, agreements, conventions, and guidelines issued by international organizations. The preservation of space and the earth's environment is equally important to all the rules, usage, and exploration parts of these treaties, conventions, or accords. The law does not support this tenet. Every day, environmental problems increase due to human activity-related space debris accumulation (Gupta, V. 2016).

The current generation on Earth is preoccupied with finding ways to simplify activities and has ceased considering the planet, which we will be leaving to future generations.

The way the world is being treated, how the ecosystem needs to be maintained, and how lawmakers are protecting the resources on Earth and in space all exhibit neglect. Recycling is one of the most efficient methods, but even if it is already in motion, it is still far from exhibiting its potential for sustainable growth in a world that is growing much more quickly.

Human activity is not limited to Earth; recently, neglectful behavior has also been observed in distant space. While many sovereign states are developing space exploration technologies, few are also intending to militarize them, opening the possibility of it turning into a battleground (Fin24, 2020).

In the Brundtland Report, the phrase "sustainable development" was first used (Bartels, M., 2020). Generally speaking, it means accommodating current advancements without compromising the needs of future generations. Maintaining economic growth, enhancing individual well-

being, and protecting and enhancing the environment are all ways to put into practice a successful sustainable development strategy. Demilitarizing space would now promote sustainable development and have a wider range of positive effects on the planet (Space4SDGs, 2020).

The Vice President of the United States of America, Mike Pence, stated in a speech that "we are in a space race today" (Bartels, M., 2020). The direct rivals are China and Russia. When viewed from a different angle, the phrase "space race" also implies that these nations are vying with one another to dominate or dominate others in space, thus infringing upon the "peaceful use of space" concept and indirectly impinging upon the "space appropriation" principle. Space is not considered as an area where all nations have equal and shared interests, but rather as a medium for political, economic, geopolitical, and military conflict, as well as a region for peace and exploration.

The concept of space demilitarization refers to the process of limiting or banning the use of space for military purposes. The idea is to ensure that space is used primarily for peaceful purposes, such as scientific research, communication, and exploration. Demilitarization of space has gained importance in recent years as the use of space for military purposes has increased, which has resulted in the development of new weapons and technologies that pose a threat to international security. This research paper will discuss the importance of demilitarization of space and its impact on sustainable development.

The militarization of space began during the Cold War when the United States and the Soviet Union began developing weapons and technologies for space-based operations. This led to the deployment of military satellites

for communication, navigation, and reconnaissance purposes. The use of space for military purposes has increased in recent years, with countries such as China and Russia also developing their space capabilities. The development of anti-satellite weapons and other technologies has increased the threat of space warfare, which could have catastrophic consequences for global security.

Demilitarization of space is important for several reasons. First, it would help to prevent the development of new weapons and technologies that could threaten international security. The use of space for military purposes could lead to an arms race, which would increase the risk of conflict and destabilize global security. Second, the disarmament of space would help to ensure that space is used primarily for peaceful purposes, such as scientific research, communication, and exploration. This would promote international cooperation and collaboration, which could lead to discoveries and advances in technology.

ASPECTS OF THE MILITARIZATION AND WEAPONIZATION OF SPACE THAT PROVIDE NEW INFORMATION

A variety of human-made and known technology has been incorporated into outer space. Mankind is the aggregate name for all people. One of the most well-known other factors that divide people and raise barriers is patriotism, which is the only word that does so in specific contexts like politics, war, and power-hungry. Many other factors cause people to oppose one another, but patriotism is one of the most well-known.

Over time, new strategies emerged for demonstrating a state's dominance and claiming its superiority. Today, the ability to manage an economy and the level of power they wield around the globe serve as evidence.

A state is considered dominant if it possesses the technology needed to explore space, which has emerged as a new arena where to demonstrate dominance. Then the Space Race began, which is just a race between nations to create new technology for exploration.

When the then-Soviet Union or the current Russian government evaluated their space project Sputnik by launching it into orbit, the world witnessed its first space race. The United States of America considered this project a challenge and intended to build a base equipped with nuclear weapons on the moon. The "primary intent was to impress the world with the prowess of the United States," a critic claimed in his brief critique of the project proposal. (Brumfield. B, 2020)

The outer space treaty places restrictions on its signatories not to deploy nuclear weapons that could wipe out humanity in space because doing so would put humanity in a vulnerable position. However, many states have developed and are developing various weapons that are not deployed in space but still present a threat because they are operable from the ground.

The few initiatives that have been developed with the intention of militarizing space are listed below:

- **United States of America in Project Horizon, 1959**

When the United States of America announced plans to build a military outpost on the moon under the moniker "Project Horizon" in 1959, the malicious use of the moon and space for military purposes first came to light (1959). A human military base would be built on the moon for military, exploration, and defense objectives. The main goal of this project was to provide space for the 10–20 people who would be in charge of running the business. To defend against attacks from the ground, the project also seeks

to install nuclear weapons. The United States launched Project Horizon in the late 1950s as a covert effort to demonstrate the capabilities of the Soviet Union and other nations in space. The introduction of the covert initiative was only made public in 2014 (Brumfield, 2020), and it was eventually abandoned because officials deemed it potentially harmful. Additionally, the United States has ratified the Outer Space Treaty.

- **China's Anti-Satellite Weapons**

Since 2005, the Chinese government has evaluated different anti-satellite missiles (ASAT) (The Diplomat, 2017). The United States of America's race to develop space technology with the Soviet Union was the first of many factors that led to the beginning of the weaponization of space, which would date back almost to the late 1950s. The world is also aware that China is taking part in the race to establish its dominance. They have been practicing with their ASAT to achieve that, and in 2007 they managed to destroy one of their meteorological satellites (The Diplomat, 2017). Later in 2013, China opted to launch its Dong Neng-2 (DN-2) missile, which reached geosynchronous orbit, where most of the United States ISR satellites are situated. This allowed the United States to see the capabilities of these ASAT weapons.

Since that time, the Chinese government's operations have been under scrutiny by the US government, particularly their military prowess.

A missile defense interceptor flight test for the DN-3 Ex atmospheric vehicle was conducted by China, according to a later report published in late 2015. However, US reports allege that the DN-3 was designed to destroy US satellites.

The vehicle was primarily intended to drive into the satellites, which would ultimately destroy them. Their primary use may be missile defense. The Chinese government is aware that American satellites gather most of the country's intelligence. The Chinese leadership wants to demonstrate to its rivals its strength, not its superiority. This is the Chinese government's interpretation of how to prevent them from going rogue since the United States acts as a rock that prevents people from peacefully exploiting space.

Other accessible sources indicate that ASAT weaponry is not just held by China. After the US, Russia, and China, India is now the fourth country with ASAT capabilities because of modifications made to its anti-ballistic missile Prithvi. The Sakti mission proved successful (Listner, M., 2011). The ability of the United States of America to use ASAT has been successfully assessed. Several reports claim that the Chinese government has bought numerous satellite jammers, and the sources claim that the targeted satellites are quietly destroyed.

The acquired jammers could obstruct communication with their owner, and by sending overwhelming signals to the satellite that is being attacked, they would obstruct access to the enemy who was in charge of the satellite.

- **United States of America, Project Thor**

The United States Project Thor, which was completed in the late 1950s, involved adding tungsten rods to a communications satellite. The satellite is equipped with a few tungsten rods but will operate similarly to any other communication satellite. This satellite will fire the tungsten rod at the target area when it gets a signal from the ground unit. The thermally shielded tungsten rods, also known as Rods from Gods, were said to measure about 20 feet long and a foot in diameter (Space.com Staff, 2016). This device

belongs to the category of "kinetic-energy weapons," where the velocity takes care of the rest when the rods are dropped. This project was one of many suggested for the American armed forces by the RAND Corporation, a non-profit organization. Due to several issues that came up over time, this project was never carried through and remained only a plan.

- **Explosive Charge Installed on a Satellite**

There aren't many satellites built to be fitted with explosive charges. When these satellites are pointed in the direction of other satellites that are intended to be destroyed, the armed satellite will detonate, eliminating the target.

DOMINANCE: A HORRIBLE APPEAL

The projects mentioned above are being planned or implemented by dominant nations, and it is undeniable that this race to satisfy one's need for power and establish one's dominance will convert space into a battlefield.

In their quest for supremacy, many states fail to recognize their connection to a single global society. As a result, they behave carelessly toward the environment, endangering all life on Earth.

The "Outer Space Treaty" Article IV has imposed restrictions on placing weapons in outer space or any celestial body, but these restrictions were insufficient to ensure sustainable development. Treaties and agreements struggle to justify their value as technological developments precede social progress or sustainable development. International institutions are forced to lean toward creating environmental protection treaties due to the abuse of power.

The human race must view space as a shared legacy, but President Donald Trump's speech demonstrates that their top aim is power over peace: "American domination in space, which is so crucial, is what we must have while defending America. It is not enough to merely have an American presence in space." Most importantly, I'm here to provide orders to the Pentagon and the Department of Defense to launch the process as quickly as possible to create a space force as the sixth branch of the armed forces. That's a significant claim.

In contrast, the Soviet Union's Kosmos 954 (Munger, S. 2016) spy satellite was covertly outfitted with a uranium-fueled nuclear reactor. It was not made aware that it contained radioactive components until it began to veer off course and begin to plummet slowly toward the ground. The wreckage left behind by this satellite covered a distance of a thousand kilometers, including radioactive debris in Canada. The Soviet Union had to pay close to $10 million in damages. After this occurrence, it was found that the necessity for this element in space required diligent observation and a record of the operations.

KEEPING SPACE MILITARIZATION UNDER CONTROL

A few nations, including China and Russia, strived to demilitarize space. The task of organizing space use agreements has been given to the United Nations. In contrast to regional laws, international law operates differently. For administrative purposes, regional laws are strictly imposed on the population of the state; nevertheless, stringent implementation of international laws would only be partially achievable. Through international treaties or accords, it can be made possible. A sovereign state has the authority to ratify the treaty and will also be subject to its terms if it does so. These independent states have the authority to withdraw as well. A

sovereign state has the right to act by its interests and without regard to the views of other states, but this choice is only partially attainable because of the presence of international law and its membership in a global community.

At a meeting on disarmament in 2014, the Russian and Chinese governments jointly proposed the "Treaty on the Prevention of the Placement of Weapons in Outer Space," and a draft was given to the UN to demonstrate their commitment to peace and rapid disarmament (Matignon, L., 2020). To maintain its superiority, the US administration was not prepared to limit its missile capabilities. A few sources from 2001 also indicate that the United States of America lost interest in "The Anti-Ballistic Reason Behind the Treaty" during that year; detractors contend that this withdrawal was necessary to advance ASAT missile technology in the United States.

Treaties were required to forbid any potential space arms race, which may have resulted from scientific advancements made by the Soviet Union and American administrations. Few states were intrigued by the development of the same nuclear weapons and the numerous applications discovered for them because they were concerned it would spark political and military disputes and a race to evaluate these weapons in space. Since 1959, the General Assembly of the United Nations has recognized the Committee on the Peaceful Uses of Outer Space (COPUOS). The same committee's goal is to examine the usage space's data and look for any patterns that might indicate disputes. One among many is the armament of space (Matignon, L., 2020).

International organizations have ratified several accords to limit the development of space weapons.

- The Treaty Banning Nuclear Weapon Tests in Atmosphere, in the Outer Space and Underwater, (1963).
- The Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, Including the Moon and Other Celestial Bodies, (1967).
- The Agreement on the Rescue of Astronauts, the Return of Astronauts, and the Return of Objects Launched into Outer Space, (1968).
- Agreement Relating to the International Telecommunications Satellite Organization, (1971).
- The Convention on International Liability for Damage Caused by Space Objects, (1972).
- The Convention on the Registration of Objects Launched into Outer Space, (1975).
- The Agreement Governing the Activities of States on the Moon and Other Celestial Bodies, (1979).

A small number of sovereign states believe that the current treaties or agreements, created in response to events that occurred between the 1960s and the 1980s and are therefore insufficient to protect outer space, must be changed immediately through new negotiations that would take into account contemporary needs. Regarding communications, metrology, and resource management, the globe is still falling behind in relation to technological advancement, even though these are the three areas where it is most important (UN Programme on Space Applications). Since it began in

1971, the Program on Space Applications has worked to develop initiatives that will aid in learning about and gaining experience in the space industry.

The UN General Assembly's First Committee on Disarmament and International Security (UN Press Release, 2017). The committee has been informed by Mr. Shuaib Mahomed, the representative for South Africa, that his government is aware of potential future developments that could result in a race for weapons supremacy and the militarization of space. His government wants to fund research that will benefit humanity and is seen as a step towards sustainable development. They think that it is the responsibility of the entire human race to limit the armament of space and prevent it from becoming a battleground. As a result, their government supports the initiatives made by international organizations to encourage safe and secure activity in outer space. They also back the draft pact put out by Russia and China. Cuba's envoy, Ms. Yailian Castro Loredo, has said that "all states have an inalienable right to enter space." Achieving sustainable development goals and a decrease in natural disasters will be made possible by ensuring that all people have equitable access to technology. Later, she discussed the increase in spy satellites, which merely constitutes unnecessary use of space. She showed her support for the Russian Chinese draft treaty and expressed her desire for the international body to propose treaties that would stop the militarization of space.

DEVELOPING SUSTAINABLE DEVELOPMENT TOGETHER

Without a doubt, there are capabilities in outer space that go beyond what is currently feasible. We should start with sustainable development as our goal. It will be a successful first step toward sustainable development if space is demilitarized. believed in the same United Nations that funded the "Space for SDGs" program (Agenda 2030). The goal of this initiative

is to use space to achieve sustainable development objectives. Over 190 countries participated in the program, which was an initiative of the UN to achieve the 17 sustainable development goals by 2030. Collaboration between international societies is the main strategy for conducting and advancing these objectives. The sovereign states are encouraged to establish future policies in support of sustainable development by the United Nations. Humanity has used outer space as a tool; now is the time to use it as a location to achieve the Sustainable Development Goals. The actual potential of the satellites will be released as we move closer to achieving the goals, which will also contribute to the advancement of humanity. There will surely be room for development in the current technology. The usage of telecommunications, global positioning systems, and earth observation satellites will improve the outcomes. As it offers a larger approach to providing more information, using space will help to achieve practically all sustainable development goals (ST/SPACEh/71, 2018). The environment, which also includes outer space, is made up of limited resources, although it has been noted that space use has been increasing quickly. Demilitarization of space is the first step towards sustainable development because it is meant to be helpful for all humans. More conversations on forming a shared viewpoint on how to use space will be encouraged.

Using space for military purposes can divert resources from space exploration and scientific research, which are critical for sustainable development. The development of anti-satellite weapons, for instance, can lead to the destruction of valuable space infrastructure and disrupt critical services such as navigation, weather forecasting, and communication. On the other hand, the use of space for peaceful purposes can provide critical data for sustainable development. Satellite technology has played a crucial

role in disaster management, climate monitoring, and environmental protection. Demilitarization of space would free up resources for space exploration, scientific research, and other peaceful uses of outer space. It would also reduce the risk of accidents, collisions, and the generation of space debris, which could harm space infrastructure and endanger lives on Earth. Demilitarization would ensure a stable, secure space environment, and promote the peaceful use of outer space for the benefit of all humankind.

CONCLUSIONS & RECOMMENDATIONS

There have been many technological advances in outer space for military, scientific, and exploration objectives, but very few for human progress. Military-grade initiatives have been created since the late 1950s to expand the defense sector; these projects have focused on outer space. The "Outer Space Treaty" or other existing international treaties that are currently advocating for peaceful use of space have then been acquired. This is when the international community has requested the immediate implementation of regulations where the international community shall participate in protecting mankind. All states would have the chance to develop technology that would help the entire international community if space were demilitarized. Sustainable goals can be attained with the support of advances in technology in areas like earth observation (EO), global communications, weather, and climate, analyzing natural disasters, and navigation.

The environment in space will be affected by improvements in weapon technology given the limited resources available. The use of ASAT weaponry or any other kind of weapon will result in the accumulation of uncountable quantities of space trash. Acting cooperatively now will

encourage sovereign states to negotiate and put into effect rigorous restrictions that limit the use of space to peaceful, exploratory, and human lifestyle-enhancing objectives. Recognizing the importance of space law is necessary. Regulations should impose stringent obligations on the states and advance the interests of the global community. International organizations should be in charge of convincing states to participate in peaceful activities. "Any sovereign state's space action will be personal, but it will always be liable to the general public." Any terrible events would cause a great deal of loss, whether it be in terms of people's lives, property, or resources. To aid in future advances, legislation supporting information exchange between states will be implemented. Due to a few states' actions that violate these treaties, the current treaties and agreements are hindered, which reduces the stability of international cooperation. The international regulatory body must ensure that national laws are implemented in conformity with international treaties, which would help sustain cooperation between the actions of states. There should be a knowledge of how vulnerable international law is and how it is applied. Few nations are currently working on or possessing weapons that can destroy targets in outer space. Few people are still working on different ways to own the technology without putting it in space and stationing these weapons there, where no treaty forbids these actions. establishment of laws that would entirely prohibit the use of weapons in space, both on Earth and in space, with a complete prohibition on any kind of space operation.

As was previously discussed, there should be equal information exchange among nations that are capable of producing new technologies, and outer space shall be a region of zero domination in terms of either technological advancement or a state's capability. Sharing knowledge equally will prevent any sort of power from emerging and bring about

peace. New statutes are necessary to establish the scientific legitimacy of celestial bodies.

This institution would result in the appropriation of territory, which is prohibited by the Outer Space Treaty even if it is for the benefit of human development. The current articles of the Outer Space Treaty, which discuss state constraints on acceptable space, should be changed. This exposes a weakness in "The Outer Space Treaty," which only forbids appropriation by governments and not by private parties. The implementation of these rules will prevent any potential wars in space and aid in the creation of a viable space industry.

Recommendations:

The following recommendations are suggested:

1. ***Clarification of Legal Framework:*** There is a need for a clear interpretation of the existing legal framework governing space activities to prevent the militarization of outer space. The terms 'weapon' and 'military use' need to be defined to avoid different interpretations by different states.

2. ***Strengthening Existing Legal Framework:*** The international community needs to strengthen the existing legal framework governing space activities to ensure the peaceful use of outer space and prevent an arms race in space. This could be done by adopting additional legal instruments or amendments to the existing ones.

3. ***Enhancing Transparency and Confidence-Building Measures:*** Transparency and confidence-building measures can be effective in promoting the demilitarization of outer space. States could share

information on their space policies, activities, and capabilities to promote transparency and reduce the risk of misunderstandings.

4. ***Encouraging International Cooperation:*** International cooperation among states and other stakeholders could promote the peaceful use of outer space and prevent an arms race in space. States could collaborate on joint space projects, share resources, and cooperate in monitoring and verifying compliance with international obligations.

5. ***Ensuring the Involvement of Private Entities:*** The growing involvement of private entities in space activities presents a challenge to the demilitarization of outer space. The legal framework governing space activities needs to evolve to ensure that the activities of private entities do not contribute to the militarization of outer space.

6. ***Capacity Building and Technology Transfer:*** Capacity building and technology transfer could enhance the capabilities of developing countries to participate in space activities and promote the peaceful use of outer space. Developed countries could provide technical assistance and training to developing countries to enhance their space capabilities.

7. ***Effects of Disarmament in Space on Sustainable Development:*** Disarmament in space can have several positive effects on sustainable development. It can help reduce the risk of armed conflict, protect the environment from the debris of weapons tested and deployed in space, and free up resources for investment in sustainable development initiatives.

To sum up, the demilitarization of outer space is a critical issue that requires urgent attention from policymakers and the international community. The recommendations provided above could contribute to the promotion of the demilitarization of outer space and ensure a secure and stable space environment for all.

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نزع السلاح في الفضاء الخارجي والتنمية المستدامة

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ملخص البحث:

يمثل تجريد الفضاء من السلاح خطوة مهمة نحو ضمان التنمية المستدامة في الفضاء الخارجي؛ إذ تشكل عسكرة الفضاء تهديدًا كبيرًا للأمن والاستقرار الدوليين وقد تؤدي إلى سباق تسلح في الفضاء

يتناول البحث الإطار القانوني والسياسي الذي يحكم أنشطة الفضاء، بما في ذلك معاهدة الفضاء الخارجي لعام 1967 التي تحظر نشر أسلحة الدمار الشامل في الفضاء الخارجي، غير أن هذه المعاهدة لا تحظر صراحة استخدام الأسلحة التقليدية في الفضاء الخارجي، الأمر الذي تسبب في إثارة المخاوف بشأن عسكرة الفضاء

يحلل البحث تأثير العسكرة على التنمية المستدامة في الفضاء الخارجي، بما في ذلك التحديات والفرص، مع الأخذ في عين الاعتبار أن استخدام الفضاء للأغراض العسكرية قد يتسبب في تحويل وجهة الموارد من استكشاف الفضاء والبحث العلمي اللذين يعدان غاية في الأهمية للتنمية المستدامة، ومن ناحية أخرى، فإن استخدام الفضاء للأغراض السلمية، مثل تكنولوجيا الأقمار الصناعية، يمكن أن يوفر بيانات مهمة للتنمية المستدامة

تفيد نتائج البحث بأن نزع السلاح من الفضاء يمكن أن يسهم بشكل كبير في التنمية المستدامة في الفضاء الخارجي؛ لأنه سيترتب عليه تكريس وتخصيص الموارد لاستكشاف

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الفضـاء والبحـث العلمـي والاسـتخدامات السـلمية الأخـرى للفضـاء الخارجـي. يوصـي البحـث بتعزيـز الشـفافية وإجـراءات بنـاء الثقـة وكذلـك تعزيـز التعـاون الدولـي وبنـاء القـدرات فـي البلـدان الناميـة للتشـجيع علـى نـزع الـسلاح مـن الفضـاء

الكلمـات الدالـة: نـزع الـسلاح، التنميـة المسـتدامة، معاهـدة الفضـاء الخارجـي، الأغـراض العسـكرية